

In the United State Patent and Trademark Office

Appn. Number: US 10/599,555 national phase entered on October 1<sup>st</sup>, 2006

5 International Appn Nr. : WO 2005/109985 / PCT/EP2005/051404

Applicants: Robert Desbrandes, Daniel L. Van Gent

Title : METHOD AND DEVICE FOR MODIFYING THE  
DEEXCITATION PROBABILITY OF NUCLEAR ISOMERS

Examiner: Mr. Johannes P. Mondt

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Givarlais, France, 2012 April 5<sup>th</sup>

**Answer to Non Final action mailed 01/06/2012**

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Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

20 Sir,

Please find the following sections in this amendment:

25 **DESCRIPTION:** It is proposed to remove the matter corresponding to an adaptation of  
the original claims, so that the description is essentially as the one filed apart from a  
minor correction on page 7 line 17.

**DRAWINGS:** Unchanged.

30 **CLAIMS:** The claim listing starts on page 4.

**REMARKS:** Arguments and remarks start on page 7.

APPENDIX A is a 37 C.F.R. 1.132 Declaration titled “Variable half-life of metastable Indium 115m after photoactivation using a Cobalt-60 source”.

- 5 APPENDIX B is 37 C.F.R. 1.132 Declaration titled “Variable half-life of metastable Indium 115m after photoactivation using a 6 MeV cLINAC”.

APPENDIX C is a 37 C.F.R. 1.132 Declaration titled “Publication : “Induced Quantum Entanglement of Nuclear Metastable States of 115In” [arXiv:nucl-ex/0411047v1]”.

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APPENDIX D: Togan E. et al in Nature, Volume 466, 5 August 2010, page 730-735:  
“Quantum entanglement between an optical photon and a solid-state spin qubit”

- 15 This application is about subject matters with a very narrow scope, which is believed to be unanticipated and non obvious. However, its reviewing and understanding by the community of researchers would probably allows for taking into account the higher entanglement of gamma rays obtained from a cLINAC than from the radiations of a Cobalt 60 source. I, and Professor Van Gent, have discovered this property during the
- 20 course of the photoactivation of isomer nuclides, lead by exactly the same prejudices as the academic community: we had noticed a slight half life variation using a Cobalt-60 source which produces groups of two gamma rays in a cascade (as reported in appendix A), and we decided to test for a 6 MeV cLINAC believed to produce non-entangled gamma rays, and to our own surprise, we measured a very high variation in
- 25 the half life of the photoactivated nuclear isomer (as reported in Appendix B). Although we publish our results as stated in appendix C, the research community ignored our work due to the need to reconcile different branch of physics knowledge without prejudices against the possibility of the invention. It has never been reported to us that these experiments have been carried out again, neither that they could have failed.
- 30 These prejudices are so well entrenched that the scientific community may very well never exploit the current specification and other published information now 8 years away, thus missing major technological advancements for the next decades including its implication in terms of the general theories of physic.

This would be a failure of the patent system not to promote a specific art and invention at this very late stage, based upon the manner in which the invention has been made, as the granting of a patent in the United States of America might help the scientific community to notice this new field of research to be investigated, and lead to new

5 developments in the major US University labs and industries. The United States is among the major countries in terms of accelerators and related equipment, and such developments would certainly participate to a renewed industrial development, thus reducing the current level of unemployment. Postponing such a patent grant, and its associated publication, may even prevent the birth of a new research domain in the US,  
10 increasing the chances that it is developed abroad first, as the skills in isomer nuclide photoactivation will rapidly move to the emerging economies. While I may still try to take time away from my other current experimentations, in order to publish the whole experimental data, arguments and examination files on the web, it will never have the high incentive provided by a US patent, which would allow for a laboratory to invest in  
15 the replication of these photo-activation experiments. Such a laboratory would then be able to carry out the developments in order to bring commercially the patented technology to the public, as well as allowing many other research institutions to carry out numerous other developments out of the scope of this very specific patent.  
Moreover, the quest for knowledge would be fulfilled in a few years; not leaving  
20 unanswered such a major interrogation as to why the photoactivation of isomer nuclides may disclose a varying half-life of the metastable nuclides, depending upon the applied process.

Respectfully yours.

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S-SIGNED: /Robert DESBRANDES/

Robert DESBRANDES

Inventor.

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